Appendix C
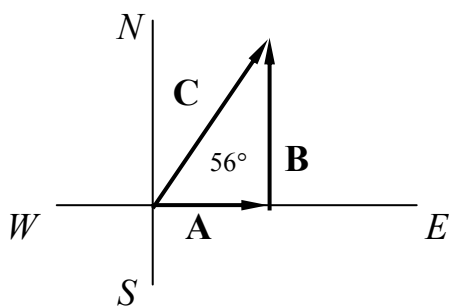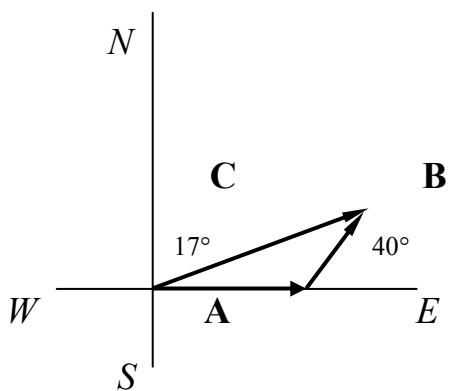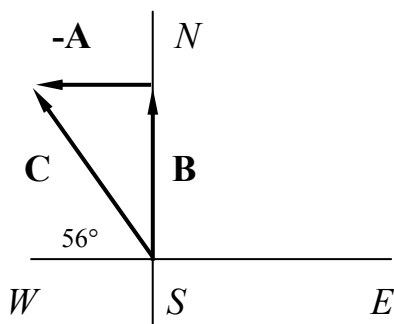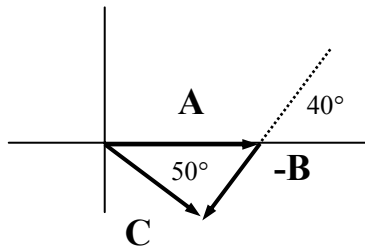
E1:

scale: ── = 10 m

vector **A** = 20 m, East

vector **B** = 30 m, North

vector **C** = **A** + **B**

vector **C** = 36 m at 56° North of East

E3:

scale: ── = 1 m/s^2

vector **A** = 4 m/s^2 due East

vector **B** = 3 m/s^2 at 40° North of East

vector **C** = **A** + **B**

vector **C** = 6.6 m/s^2 at ~17° North of East

E5:

scale: ── = 10 m

vector **A** = - **A** from E1, 20 m, West

vector **B** = 30 m, North

vector **C** = **B** – **A** = **B** + (-**A**)

vector **C** = 36 m at 56° North of West

E8:

vector $\mathbf{C} = \mathbf{A} - \mathbf{B} = \mathbf{A} + (-\mathbf{B})$

vector $\mathbf{C} = 3.6$ m/s^2 at ~50° South of East

A 40°

50° -B

C

Ch. 4:

Q7:

The more massive object will have a smaller acceleration because $a = F/m$

Q9:

-F_1 F_2

No. If $\mathbf{F_1} = \mathbf{F_2}$, $F_1 - F_2 = 0$, $a = F/m = 0/m = 0$
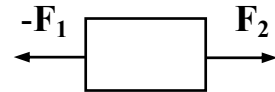
Q10:

Yes, it is possible. If the total force acting on the object is equal zero, this object can be at the rest or moves without acceleration.

E1:

$a = F/m = (40 \text{ N})/(5 \text{ kg}) = 8 \text{ m/s}^2$

E7:

$\mathbf{F_{total}} = \mathbf{F_1} - \mathbf{F_2} = F_1 - F_2 = 50 \text{ N} - 30 \text{ N} = 20 \text{ N}$,
$a = (F_{total})/m$, hence $m = (F_{total})/a = (20 \text{ N})/(4 \text{ m/s}^2) = 5 \text{ kg}$

E8:

$\mathbf{F_{total}} = \mathbf{F_1} + \mathbf{F_2} + \mathbf{F_3} = F_1 + F_2 - F_3 = 5 \text{ N} + 25 \text{ N} - 10 \text{ N} = 20 \text{ N}$
$a = (F_{total})/m = (20 \text{ N})/(5 \text{ kg}) = 4 \text{ m/s}^2$